



Biomarker Differences between Genders in Korean Diabetes Mellitus patients

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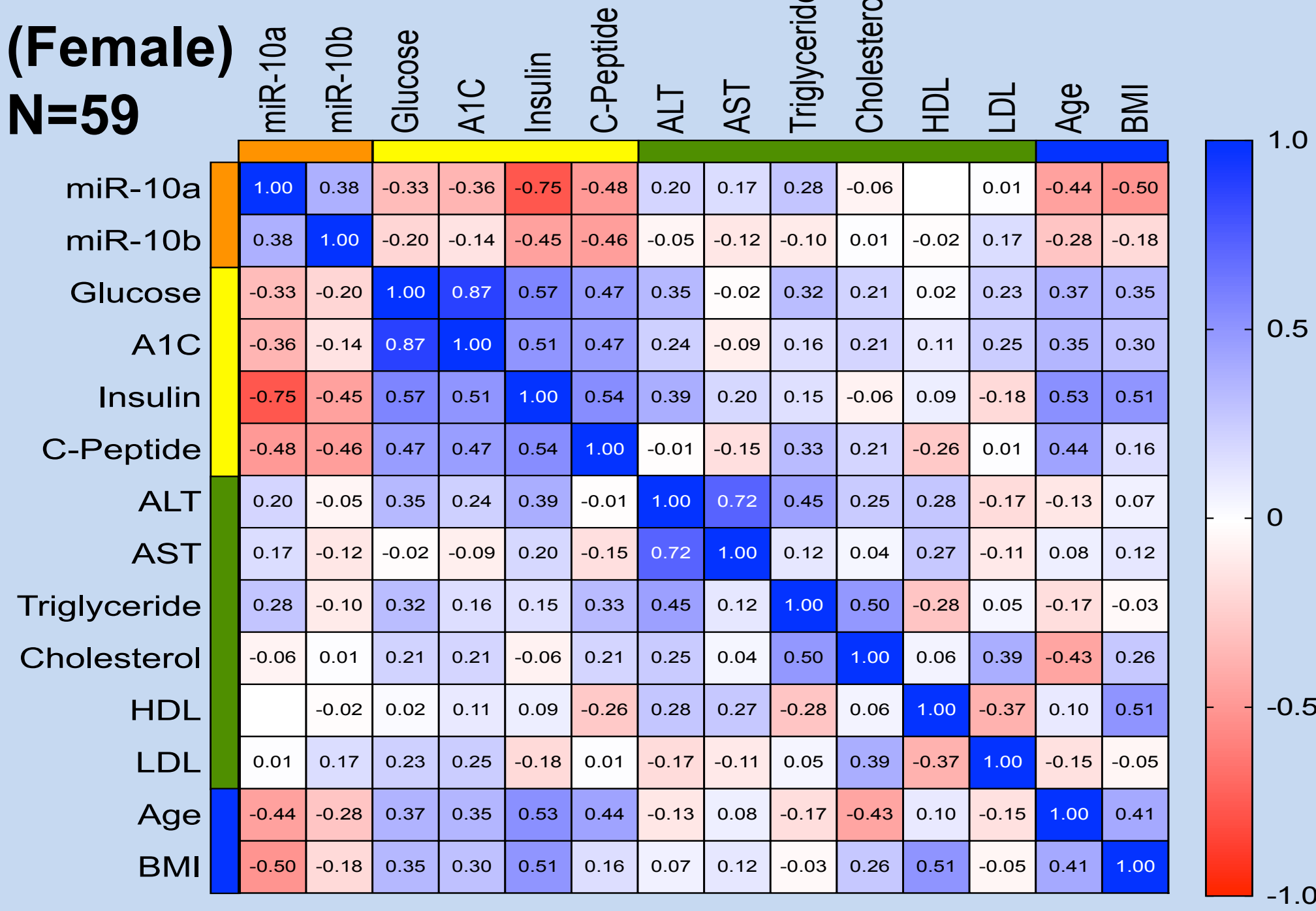
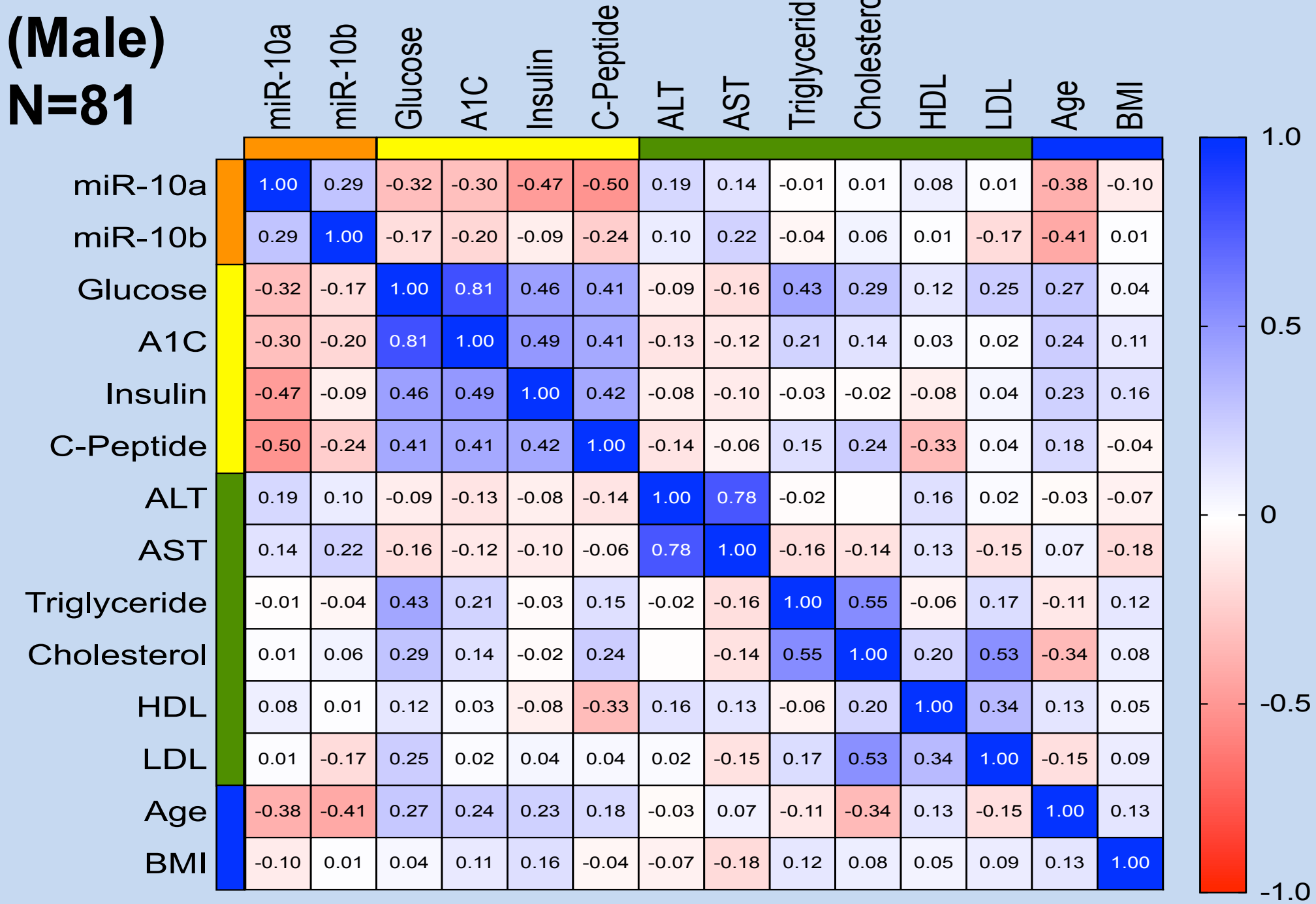
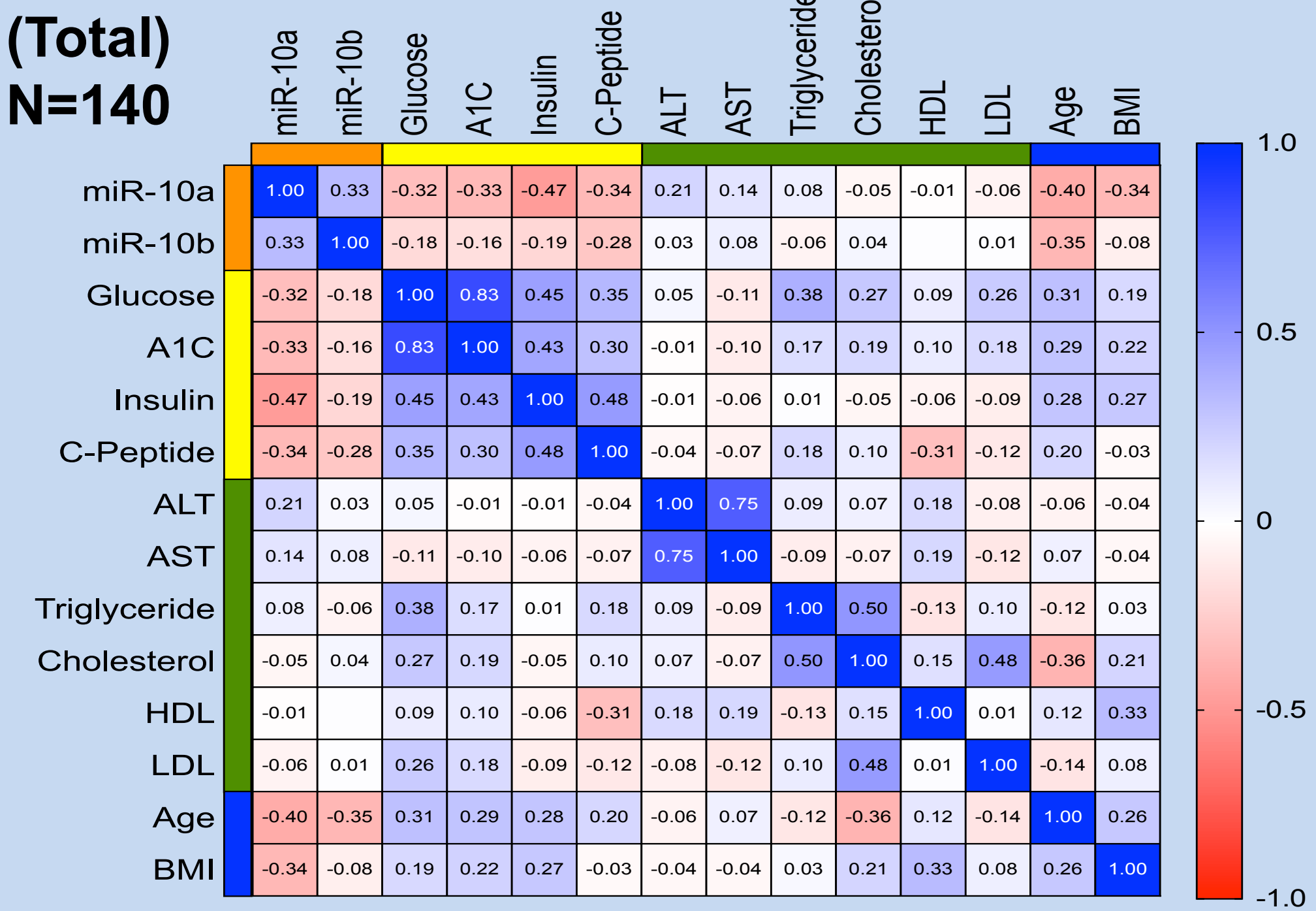
Background and Purpose

- Previously, we demonstrated that miR-10b-5p deficiency in cells expressing the receptor tyrosine kinase KIT leads to the degeneration of β cells in the pancreas and interstitial cells of Cajal in the gastrointestinal tract. Injection of a synthesized miR-10b-5p mimic into mice with diabetes and gastroparesis lowered and maintained healthy blood glucose levels, improved gastrointestinal functions, and reversed the gastroparesis phenotype.
- We also found that the KO effect of *mir-10b* in mice is sex-dependent. Male *mir-10b* KO mice show profound effects and develop diabetes but female KO mice have little change occur.
- Interestingly, there are more male patients with diabetes before age 45, with this pattern being reversed after age 45, with more female patients showing diabetic phenotypes.
- The female hormone estrogen protects rodent pancreatic β cells *in vivo* against multiple pro-apoptotic insults and this protection is conserved in human islets.
- This gender and age dependency on the formation of diabetes suggests that menopausal estrogen hormone therapy may reduce the incidence of T2D in women and protect β cell function in post-menopausal women.
- The purpose of this study is to investigate the expression pattern and the difference between male and female in the HbA1c, glucose, C-peptide, Insulin, miR-10a and mir-10b in Korean Diabetes Mellitus Patients and healthy control.

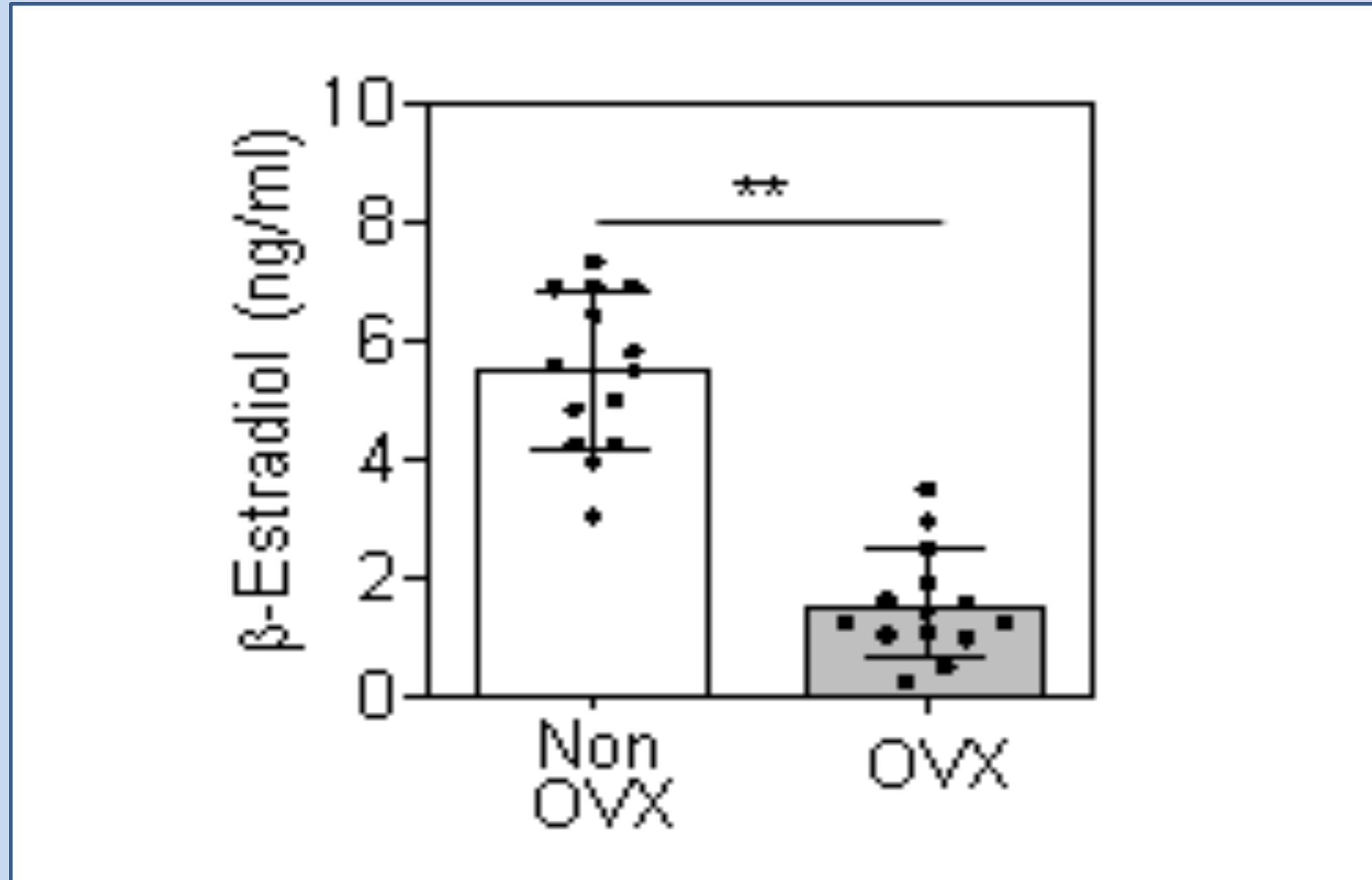
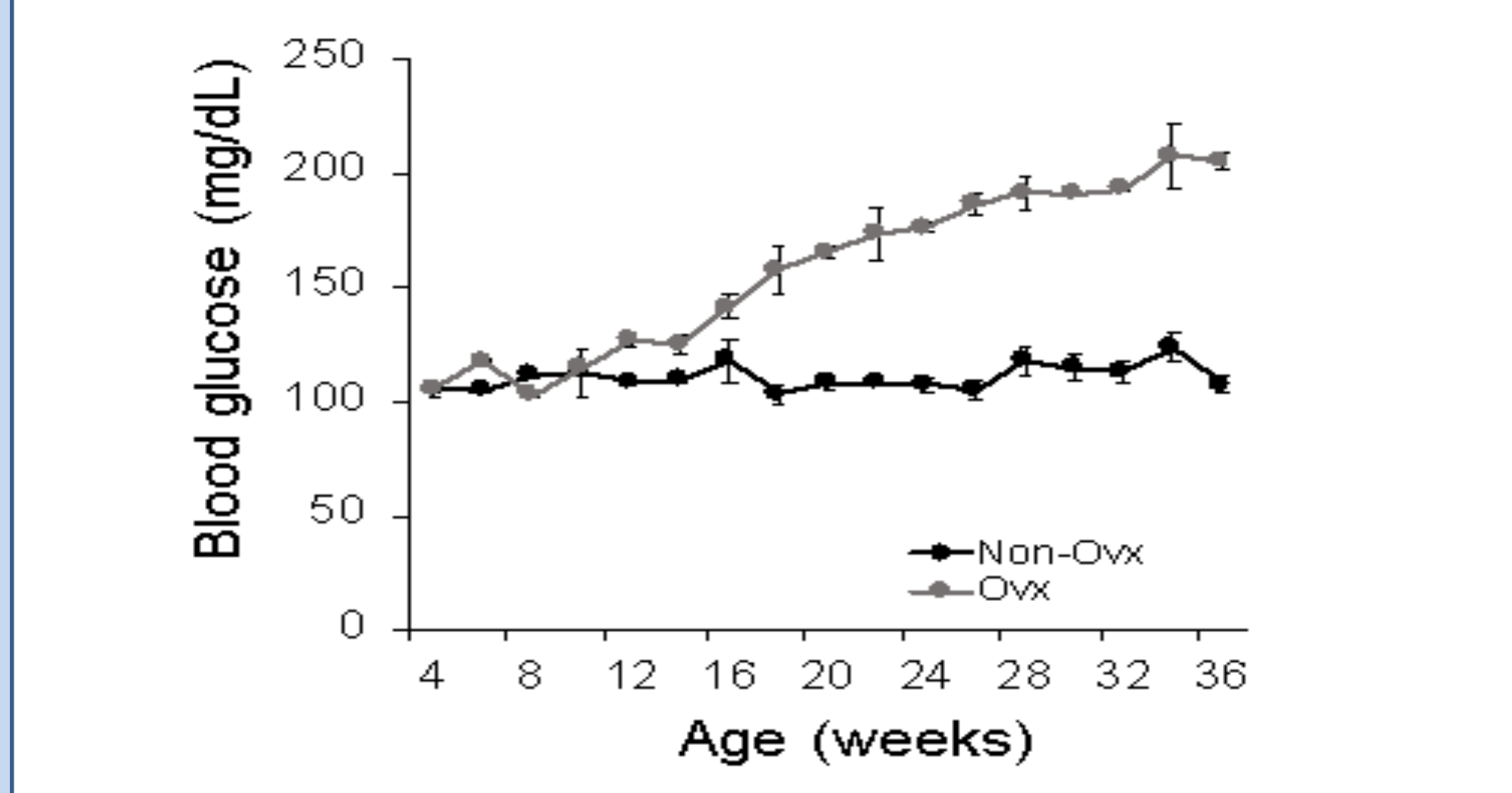
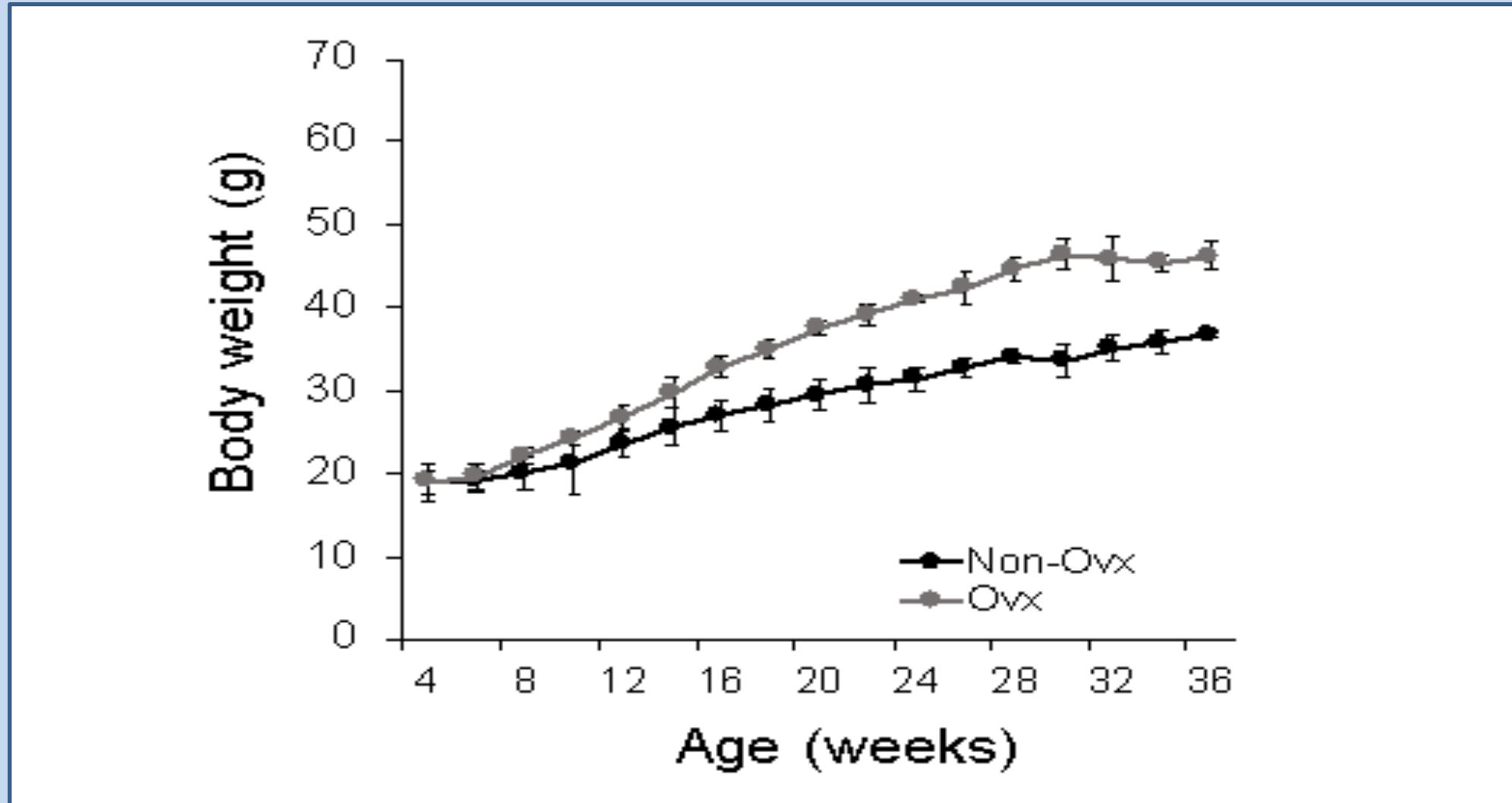
Material and Method

- Biobank in Wonkwang University Hospital
;DM patients (M=62, F=38), Healthy (M=10, F=10)
- Recruiting Volunteer
; Healthy (M=9, F=11)
- ELISA : C-peptide and insulin
- qPCR : miR-10a/b expression
- Glucose : Blood chemistry

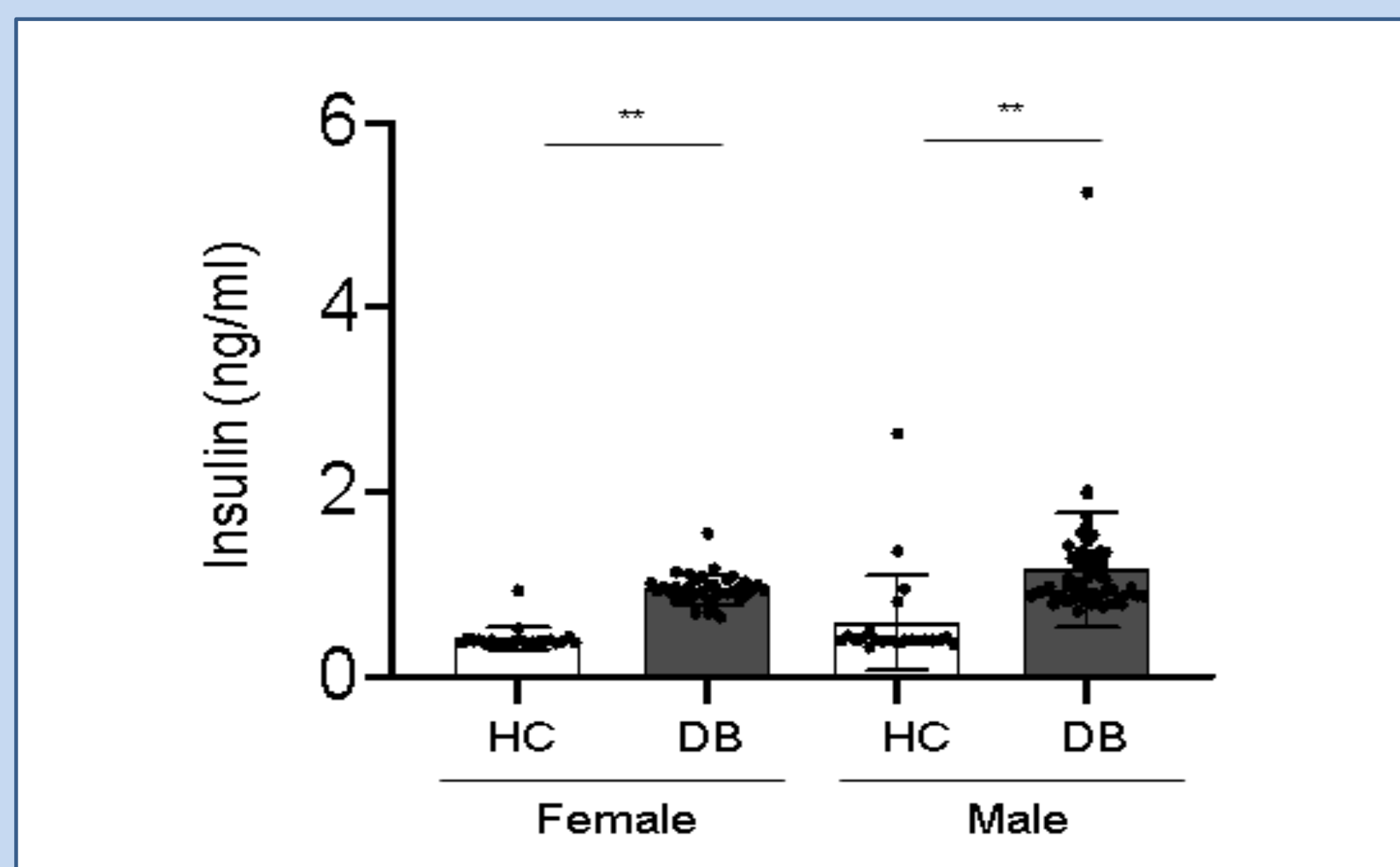
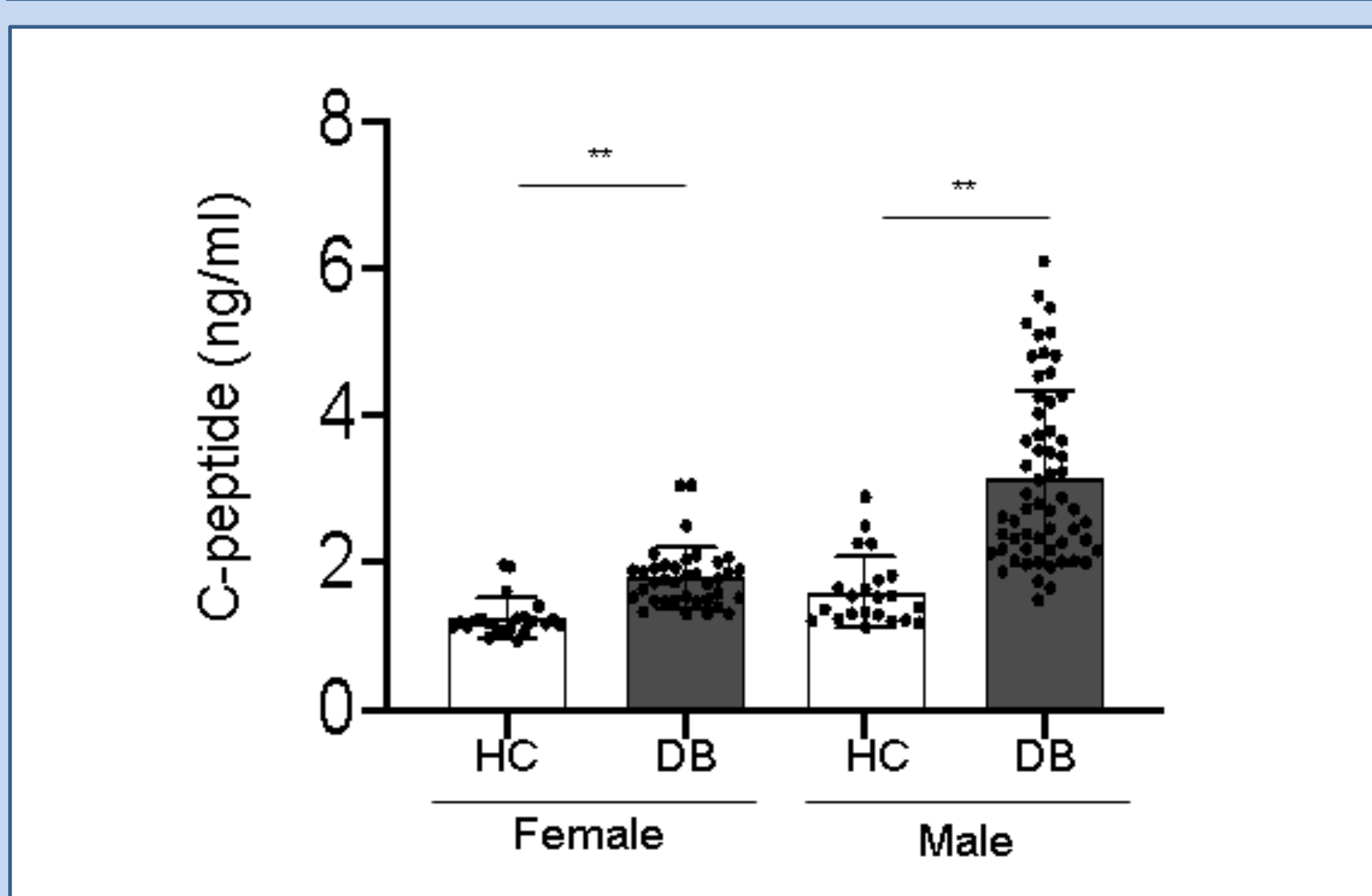
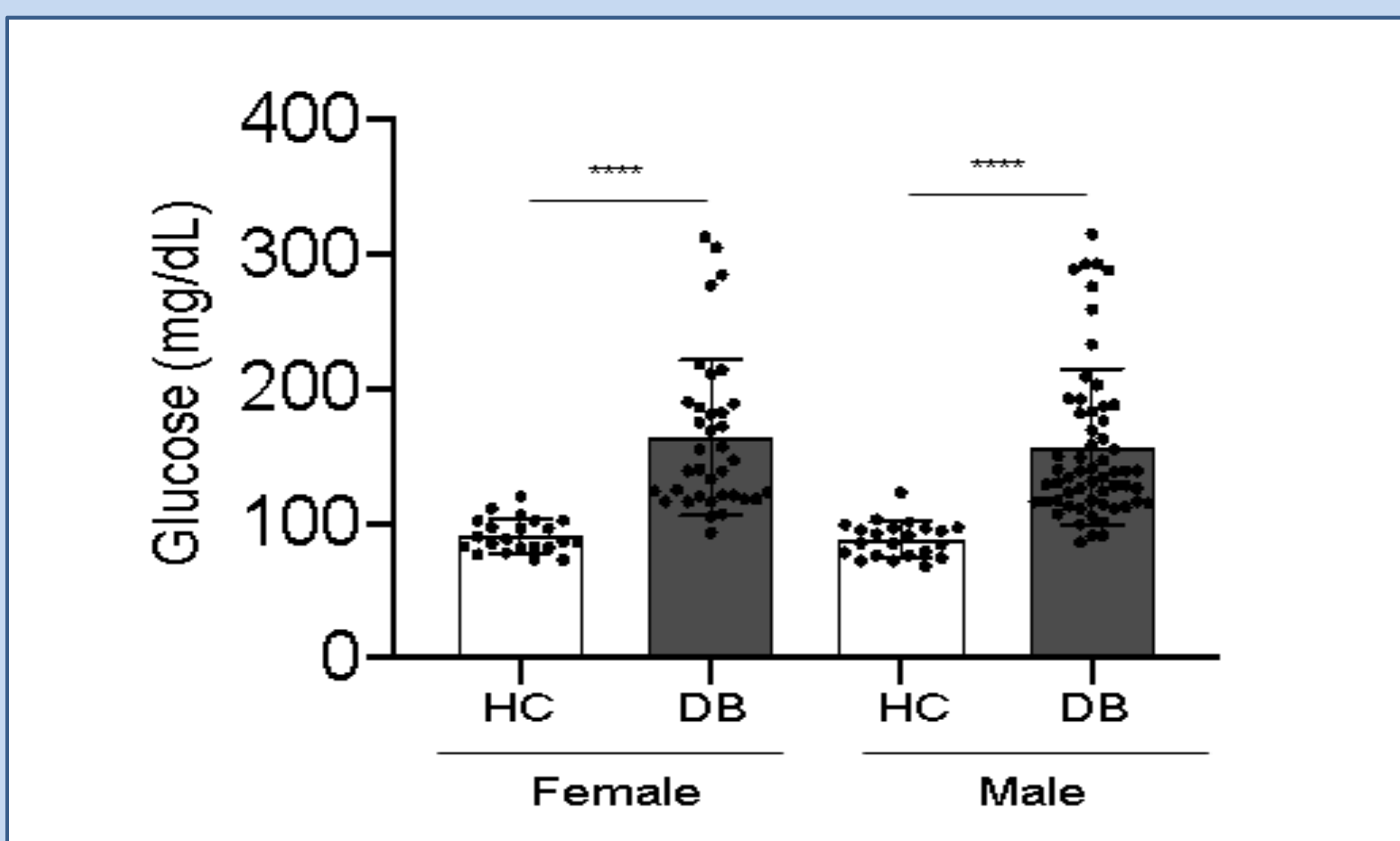
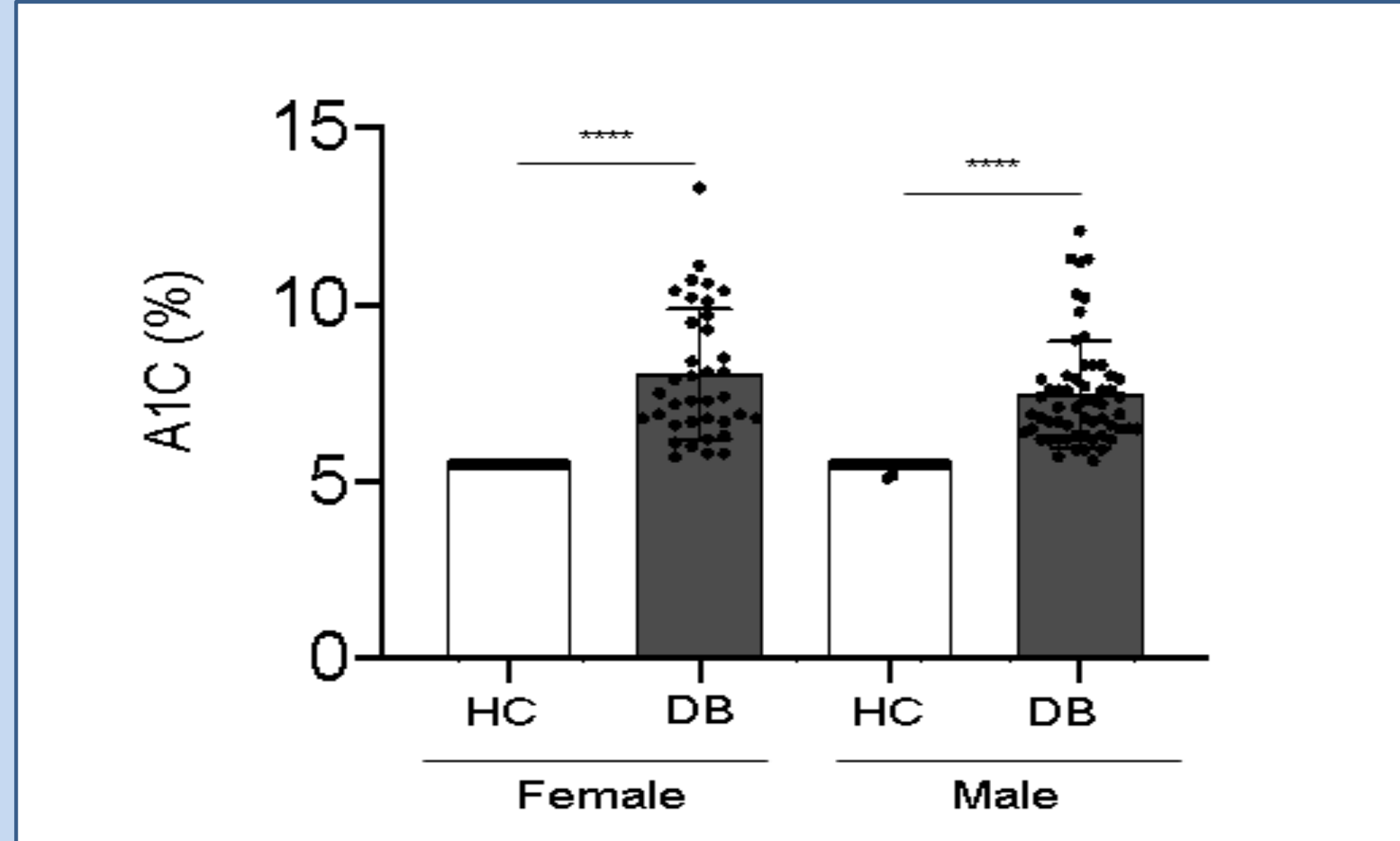
Results



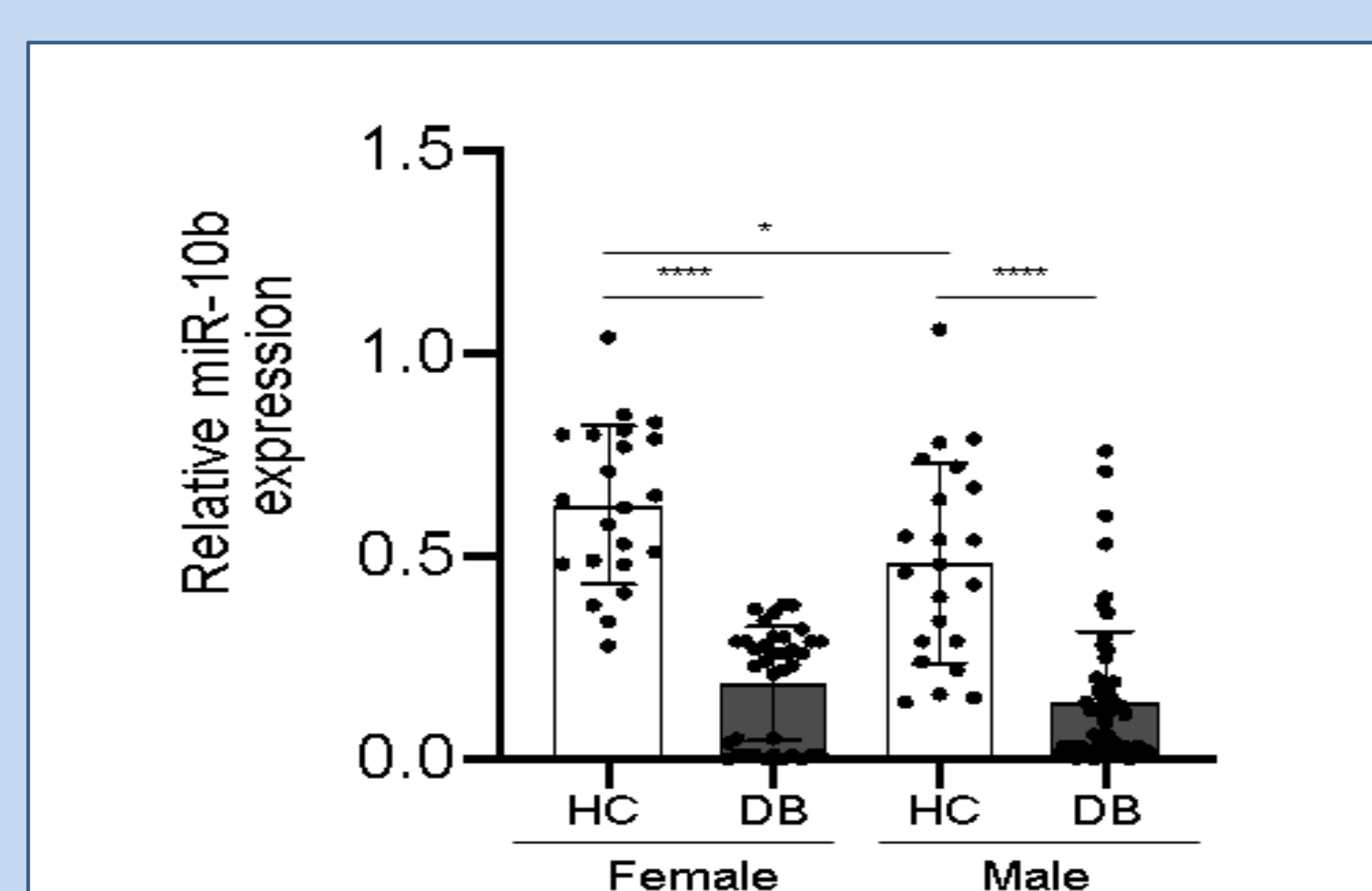
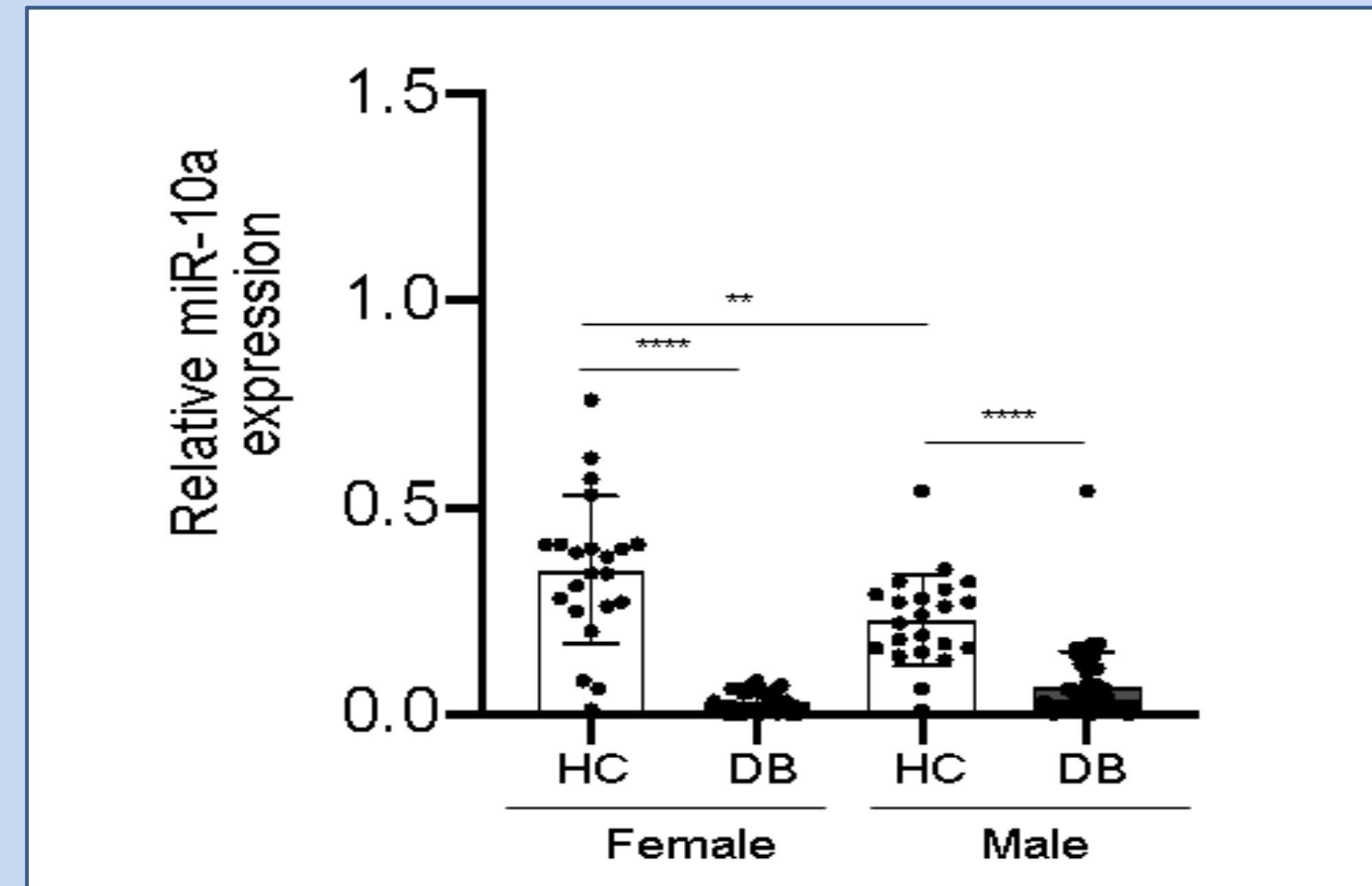
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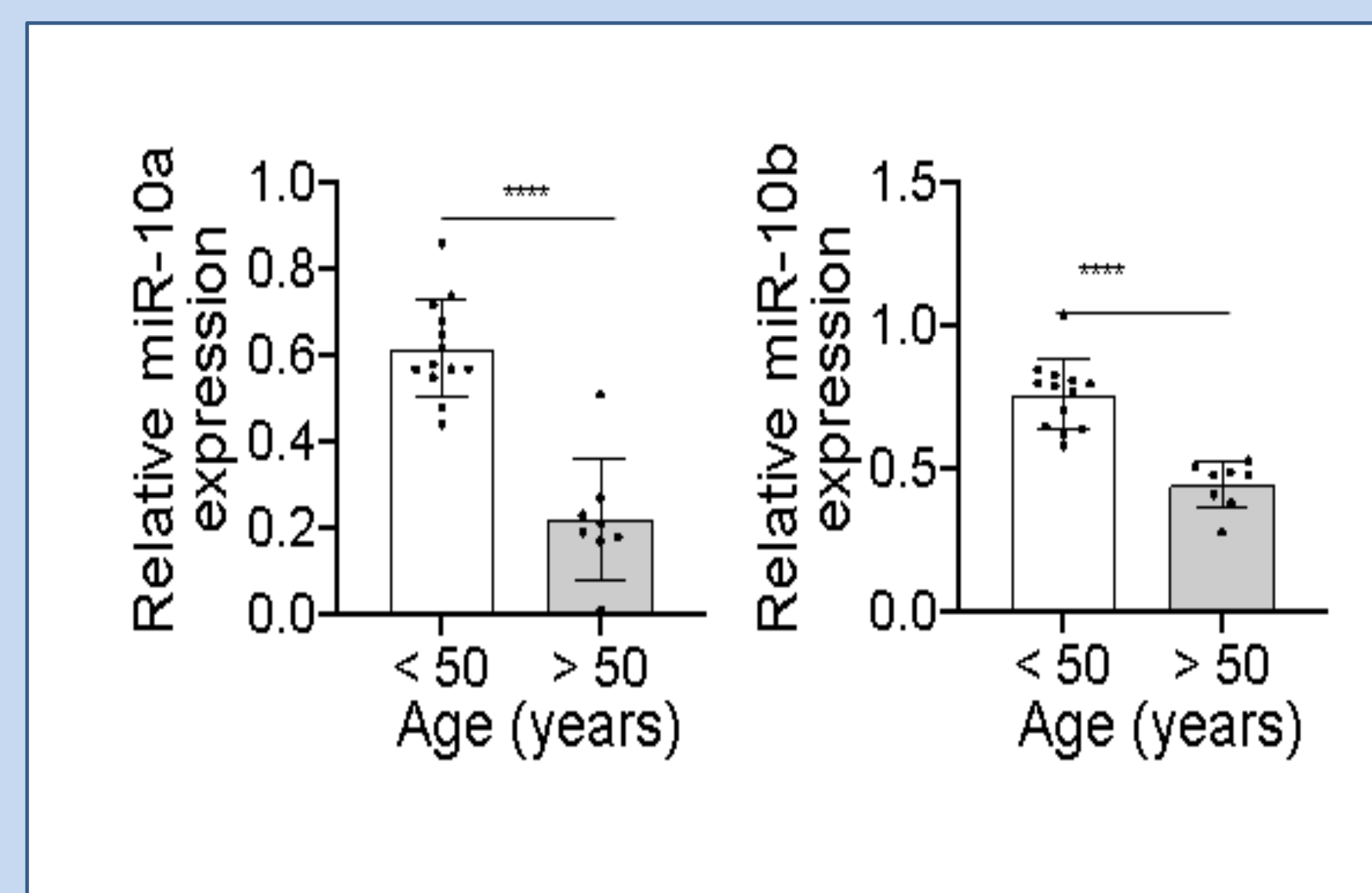
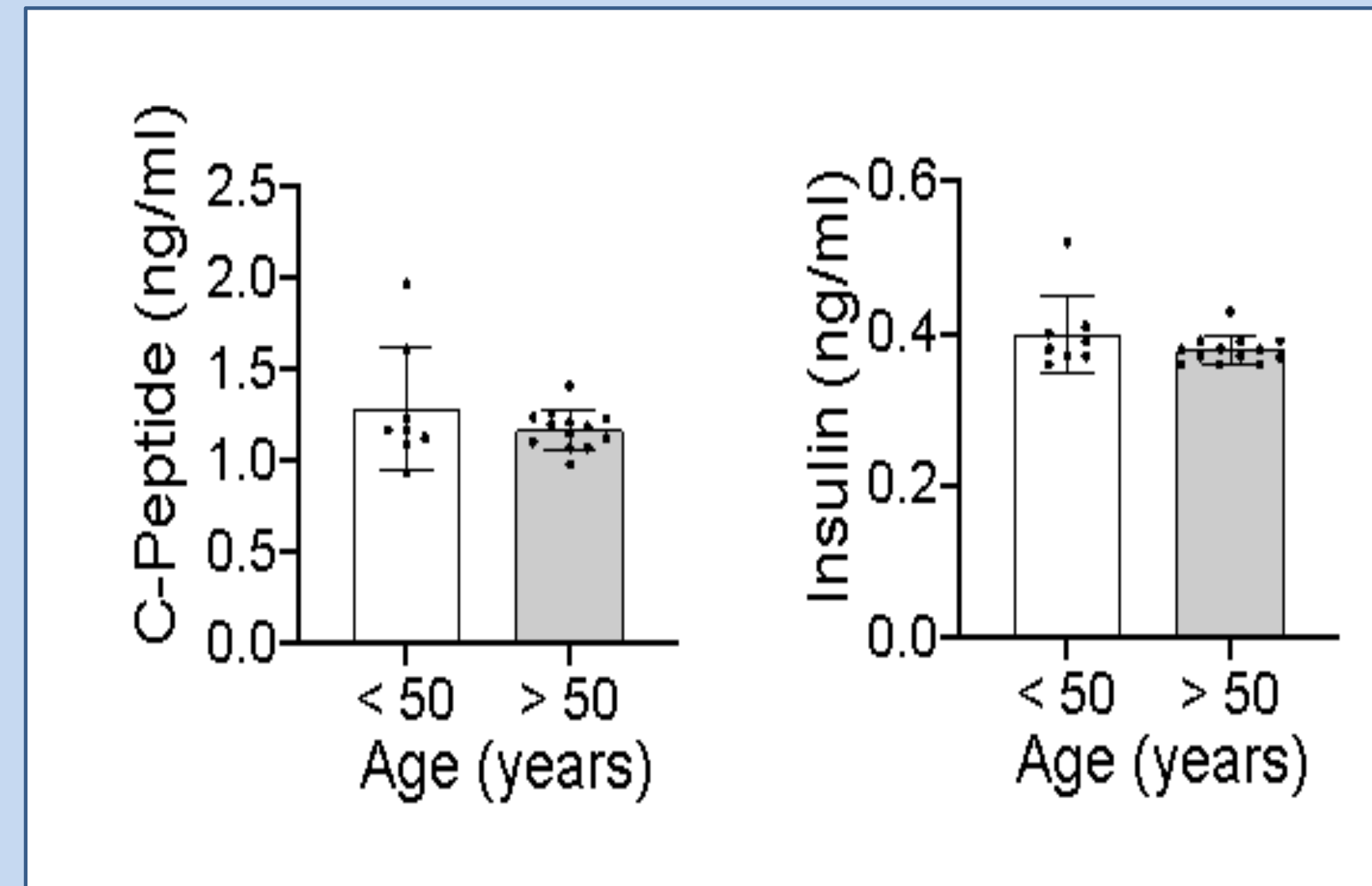
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Summary

- In the ovariectomy model, β -estradiol was significantly reduced concomitant with the lesser expression of miR-10a and 10b compared to control.
- There were significant increases in the plasma concentration of HbA1c, glucose, C-peptide and Insulin from the plasma in both of male and female Korean Diabetes Mellitus Patients compared to each healthy control.
- There were significant decrease in the relative expression of miR-10a and mir-10b between male and female in the patients as well as in the healthy control.
- Relative expression of miR-10a and mir-10b was significantly higher in the female healthy than male healthy control. Among the female healthy controls, over the age of 50 years old showed the higher expression of miR-10a and mir-10b than below the 50 years old.

Conclusion

From our data, we suggest that there are significant differences in the expression of miR-10a and mir-10b between female and male as well as between before menopause and postmenopause women. Therefore, diabetes might be protected by estrogen via miR-10a and mir-10b, and in situations which estrogen decreases, such as menopause, these protective effects are lowered with simultaneous decrease of mir-10a and mir-10b.